NEWS REPORT

H. D. Gardner

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NATIONAL RESEARCH COUNCIL

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NEWS REPORT

National Academy of Sciences National Research Council

VOLUME IX *March–April 1959* NUMBER 2

Committee on Oceanography Report

R. C. VETTER

Executive Secretary, Committee on Oceanography

APPROXIMATELY a year and a half after its organization (*see* NEWS REPORT, Vol. VIII, p. 17, 1958) the Committee on Oceanography has made available the first chapter, "Introduction and Summary of Recommendations," of its report *Oceanography 1960 to 1970*. The Committee, at the request of Detlev W. Bronk, President of the National Academy of Sciences, made a careful survey of the present status of the marine sciences in the United States and assessed the major problems in this field. The study was complicated by its wide scope. "Oceanography" was considered in its broadest sense to encompass the scientific study of all aspects of the oceans, their boundaries and their contents. Many government agencies have direct and indirect interests in the ocean, and the marine sciences are studied in situations varying from the small shoreside laboratory to the handful of larger oceanographic institutions.

On the basis of its findings, the Committee prepared a series of recommendations designed to assist in the development of a national program for strengthening the marine sciences during the next ten years to a level which is consistent both with our ability to increase manpower and facilities and with the urgent needs for information.

Because the Committee feels that its recommendations should be brought to the immediate attention of scientists and administrators, it has issued a condensed version of its full report in the form of an introductory and summary chapter. Succeeding chapters, containing detailed discussions, background, facts, and reasoning leading up to these recommendations will be made available as soon as possible. Chapters are under preparation on:

Basic Research in Oceanography During the Next Ten Years
Ocean Resources
Oceanographic Research for Defense Applications
Artificial Radioactivity in the Marine Environment
New Research Ships
Engineering Needs for Ocean Exploration
Education and Manpower
Ocean-Wide Surveys
International Cooperation
History of Oceanography
Marine Sciences in the United States—1958

The Committee found that relative to other areas of scientific endeavor, progress in the marine sciences in the United States has been slow. There has been a substantial amount of excellent work accomplished under extremely difficult and trying circumstances, but the needs and potentialities in this field are far in advance of our accomplishments to date.

Future Prospects

Oceanography as a meeting place for the application of many scientific disciplines often has been on the receiving end of developments in other fields. Yet many fundamental problems now require knowledge which can be obtained only from the oceans. Our understanding of the geological history of the earth requires a detailed knowledge of the structure of the deep ocean basins, the formation of 35,000-foot deep trenches, of forces which generate 2,000-mile long fracture zones, and of the sediments underlying deep abyssal plains. All these features are quite different from geological structures found on land. How were they formed and why are they so different? Studies of these features combined with studies of the waters and the living creatures of the sea will tell us much about the geological history of our planet and of the origin and evolution of life on earth.

The report points out that about a third of the energy of sunlight is used to evaporate sea water. This evaporation and the subsequent condensation are the primary means by which solar energy is absorbed in the atmosphere. Thus the oceans play a major role in the workings of the great heat engine which controls our day-to-day weather and our month-to-month climate. Since conditions in the oceans change more slowly than those in the atmosphere, it seems likely that changes in the circulation of the oceans profoundly influence our climate. We can hope for understanding, prediction, and the eventual possibility of control of climate through studies of deep ocean circulation.

One of the major resources which man extracts from the sea is animal protein. Yet we do not know how many fish are in the sea. We do not know what determines their migrations, their numbers, or what can be done to increase them. Knowledge of ocean circulation and the interrelationships of living organisms in the sea can help solve the increasingly acute problems of providing animal protein food for the growing numbers of underfed people in the world. Given more study, man can harvest economically considerably more food from the seas than is now possible. Considering the position of the United States in the community of nations, it seems appropriate, even essential, that we lead the way in this respect.

Prior to the 20th century the oceans acted more as a barrier than as a medium for the movement and concealment of materials, man, and weapons. Our ultimate defense goal in studying the oceans must be to decrease their military usefulness to a potential aggressor. The Committee believes that there is no comparison between the urgencies of the problems of military operations in the ocean and those of outer space. The report points out that we will not be able to detect submerged submarines efficiently unless we learn far more about the ocean depths than we know now. We will not be in a position to negotiate an adequate international submarine control and monitoring system until we have the ability to make the oceans transparent. To accomplish this, we must place greater national emphasis on research in the marine geophysical sciences, on surveys of the ocean, and on the development of ocean-wide surveillance devices.

Recommended Program

The report stresses the importance of a planned and logical development in oceanographic research so that a wasteful "crash" program may be avoided. This development is based on a cornerstone of more intensive basic research studies of all aspects of marine sciences. The increase in the support of basic marine sciences should result in at least doubling the level of basic research in the next ten years.

A new program of systematic oceanwide surveys of such features as depth, salinity, temperature, current velocity, wave motion, magnetism, and biological activity should be established. The growth of research and survey programs should be paralleled by a vigorous and imaginative expansion in applied research and development programs. To accomplish these goals, more marine scientists must be educated, additional ships and shore facilities must be built, new instruments and techniques must be developed, and international co-

operation in the marine sciences must be strengthened.

Recognizing that the first requirement is for increasing the number and quality of scientists engaged in oceanographic work, the report recommends a program of post-doctoral and pre-doctoral fellowships, the development of oceanographic education at new centers and additional funds for salaries, equipment and indirect costs associated with an expanded program of education.

Ships are to the oceanographer what the accelerator is to the nuclear physicist. He cannot do research without them. Our existing United States fleet of oceanographic research ships consists mainly of converted yachts, fishing vessels, and ex-Navy ships. Many are old, obsolete, and incapable of efficient operation. The research, development, and survey fleet should be increased from its present size of about 45 ships to 85 ships during the next ten years. Taking into account the replacement of ships which must be retired during the next decade, this means that 70 ships should be constructed at a total estimated cost of somewhat over $200,000,000. The recommended size ranges for these ships are about 500 tons, 1,200 tons, and 2,200 tons displacement. With proper design, the construction of these relatively small ocean-going ships can, in addition to greatly increasing the capability and efficiency of our research work at sea, provide much information about the construction of small ocean-going ships.

In addition to ships, new laboratories are needed for basic research, additional facilities must be provided for processing oceanographic data, and new devices for exploring the ocean (such as deep-diving manned bathyscaphs, manned and unmanned buoys, and other devices) must be developed and used.

The increasing use of the oceans for the disposal of radioactive materials, as the use of nuclear energy for peaceful or military purposes increases, is discussed, specific programs for monitoring the introduction of radioactive materials in the sea are outlined and research on various processes in the ocean such as circulation and mixing through controlled experiments involving the introduction of radioactive materials are described in detail.

The total 10-year budget amounts to somewhat more than $650 million over and above the present level of expenditure. The importance of long term funding for more efficient planning of research programs is emphasized as is the need for the parallel development of a national oceanographic program within the various departments of the government concerned with marine sciences. The Committee believes that oceanography can develop best through a close relationship between the scientists and the various users of oceanographic information such as the U. S. Navy, the Atomic Energy Commission, and the Bureau of Commercial Fisheries, instead of through a centralized bureau or agency. Indeed, the report states that any apparent duplication of effort which might be involved in such a parallel structure of support would be trivial compared to the value of insuring a close working relationship between the scientists and the agencies.

Finally, although recognizing that the major support of oceanography will continue to come from the state and federal governments, the report points out the importance of support from foundations and industry for new and unusual research programs and for the supplemental support of private laboratories and academic groups.

SCIENCE NEWS

NATIONAL RESEARCH COUNCIL MEETING

The second meeting of the National Research Council as a body took place at the Academy-Research Council, March 19–21. Plenary sessions were held on Thursday afternoon and evening, March 19, and on Saturday morning, March 21. The meeting began with a luncheon on March 19.

The first plenary session on Thursday, March 19, opened with a review of the activities of the Research Council since the last meeting by Detlev W. Bronk, President of the National Academy of Sciences. The remainder of the session was devoted to addresses on four main topics:

1) The Nature and Conduct of Fellowship Programs in Science—Warren Weaver, Rockefeller Foundation

2) U. S. Science in Foreign Aid—J. George Harrar, Rockefeller Foundation

3) The Place of Behavioral Science in the National Research Council—Clyde K. Kluckhohn, Harvard University; and Donald G. Marquis, Social Science Research Council

4) Means and Patterns for the Support of Scientific Research—James R. Killian, Special Assistant to the President for Science and Technology; Alan T. Waterman, Director, National Science Foundation; and James A. Shannon, Director, National Institutes of Health

On Friday morning, March 20, the participants divided themselves into separate, smaller groups to explore further each of the topics presented at the plenary session the previous day. After a full discussion of the issues involved each group formulated conclusions and recommendations to be presented to the entire Research Council at the concluding plenary session.

The eight divisions of the Research Council held separate meetings Friday afternoon and evening to review their programs of the past year, to plan for the coming year, and to consider further the four major topics listed above as they related to division activities.

The final plenary session was held on Saturday morning, March 21. At this time each discussion group presented a report of its deliberations together with recommendations for further action on the part of the Research Council.

ANNUAL MEETING NATIONAL ACADEMY OF SCIENCES

The ninety-sixth annual meeting of the National Academy of Sciences will take place at the Academy, April 27–29. Scientific papers will be presented at sessions on Monday, April 27, and Wednesday, April 29, while the Academy will meet in business session on Tuesday for the election of officers and new members and for the discussion of general Academy affairs.

The scientific sessions on Monday and Wednesday will include more than forty contributed papers in a variety of fields. In addition, four symposia of invited papers will be presented on the following subjects: *1*) the deep sea, Monday morning; 2) physics, chemistry, and biology of the atmosphere, Monday afternoon; 3) the scientific effects of artificially introduced radiation at high altitudes, Wednesday morning; and *4*) problems in space exploration, Wednesday afternoon. The symposium on problems in space exploration, arranged in cooperation with the American Physical Society and the National Aeronautics and Space Administration, will continue at the Academy on Thursday, April 30, the first day of the Washington meeting of the American Physical Society.

A number of Academy medals and awards will be presented on Monday evening in ceremonies which will be followed by a reception for the medalists, members of the Academy, and their guests. Scientific demonstrations and exhibits will be on view during the reception.

The Academy dinner will be held at the Sheraton-Park Hotel on Tuesday evening, immediately preceded by the President's reception for the members and their guests.

COMMITTEE ON SCOPE AND CONDUCT OF MATERIALS RESEARCH

Detlev W. Bronk, President of the National Academy of Sciences, has announced the appointment of a new committee to consider how more rapid and effective progress can be realized in the materials research and development efforts of the country in relation to both the national defense and the general public welfare. The Committee on Scope and Conduct of Materials Research will consider how basic and applied materials research carried on for both defense and non-defense purposes, in governmental, industrial, and in academic and other research organizations might be made more effective.

The committee will attempt to evaluate any effects on materials research that might result through increased financial support, through changes in administrative or organizational patterns, through improved coordination, or by other means.

Clyde Williams, now president of Clyde Williams and Company, is serving as chairman. Dr. Williams was formerly President and Director of Battelle Memorial Institute and throughout World War II served as chairman of the War Metallurgy Committee of the Academy–Research Council. The other members of the committee are:

ALLEN V. ASTIN, Director, National Bureau of Standards
HARVEY BROOKS, Dean of Engineering and Applied Physics, Harvard University
A. J. HERZIG, President, Climax Molybdenum Company
A. B. KINZEL, Vice President, Union Carbide Corporation
THOMAS H. MILLER, Assistant Director, U. S. Bureau of Mines
JOHN MORGAN, Consultant, Washington, D. C.
THOMAS B. NOLAN, Director, U. S. Geological Survey
ALBERT J. PHILLIPS, Vice President, American Smelting and Refining Company
C. F. RASSWEILER, Vice Chairman of the Board, Johns Manville Corporation
E. DUER REEVES, Executive Vice President, Esso Standard Oil Company
FREDERICK SEITZ, Department of Physics, University of Illinois
CYRIL S. SMITH, Institute for the Study of Metals, University of Chicago
DAVID SWAN, Vice President for Research, Linde Company

NEW CHAIRMAN ADVISORY BOARD ON EDUCATION

Detlev W. Bronk, President of the National Academy of Sciences, has announced the appointment of Caryl Parker Haskins as chairman of the Advisory Board on Education, a position formerly held by Maynard M. Boring well-known engineering consultant. Dr. Haskins, President of the Carnegie Institution of Washington, was the Assistant Director for the Survey of Research in Industry conducted by the National Research Council in 1940–41 and became an Academy member in 1956. He served as a member of the Panel on Education for the Rockefeller Brothers Fund which prepared the report "The Pursuit of Excellence: Education and the Future of America" last year. Dr. Haskins is currently serving on the President's Science Advisory Committee.

NEW CHAIRMAN HIGHWAY RESEARCH BOARD

The Highway Research Board has announced the election of Harmer E. Davis, Director of the Institute of Transportation and Traffic Engineering, University of California, as chairman of the Board for 1959. Mr. Davis, who served as First Vice-Chairman during 1958, succeeds C. H. Scholer, Head of the Applied Mechanics Department, Kansas State College.

In addition to electing Mr. Davis to serve as its chairman for the ensuing year, the Board also chose him to receive its annual Roy W. Crum Award for Distinguished Service. The award was in recognition of his outstanding leadership and achievement in highway engineering, in highway engineering research, and as an educator. As Director of the Institute of Transportation and Traffic Engineering at the University of California since it was established in 1948, Mr. Davis has given leadership and inspiration to a broad program of education, research, and public service in the planning, design, construction, operation, maintenance, financing and administration of highways, airports, and allied transportation facilities.

VISITING RESEARCH SCIENTISTS PROGRAM

The first awards under the new expanded Visiting Research Scientists Program, which the Academy–Research Council is administering for the International Cooperation Administration, have now been made, and the first 53 participants in the program are already in the United States. The following list gives the name and country of origin of the recipients as well as the field and location of their research:

From Argentina:

Rafael Grinfeld, Physics—University of California at Berkeley, with J. G. Phillips

Roberto J. Poljak, Geology—Massachusetts Institute of Technology, with M. J. Buerger

From Austria:

Kurt Bretterbauer, Geophysics—Ohio State University, with Weikko Heiskanen

Johann Leicht, Mathematics—University of Chicago, with Saunders Mac Lane

From Belgium:

Louis A. Burnelle, Quantum chemistry—University of Indiana, with Harrison Shull

J. M. Denucé, Biochemistry—Harvard University, with C. M. Williams

Jean-Marie Ghuysen, Microbiology—University of California at Berkeley, with Roger Y. Stanier

From Denmark:

Erik G. Jørgensen, Botany—Carnegie Institution of Washington, with C. S. French

From Eire:

Vincent G. Hart, Mathematics—Massachusetts Institute of Technology, with W. T. Martin

From Finland:

Eero S. Avela, Organic chemistry—New York State College of Forestry, Syracuse University, with J. J. Hermans

Joakim J. Donner, Geology—Yale University, with Richard Foster Flint

Olli J. Halkka, Genetics—Columbia University, with A. Pollister

From France:

Guy Echalier, Endocrinology—Harvard University, with C. M. Williams

Henri Epstein, Physics—Princeton University, with A. S. Wightman

Gérard Flamand, Physics—Princeton University, with A. S. Wightman

Alain Paraf, Virology—The Wistar Institute, with Hilary Koprowski

From Germany:

Jost B. Walther, Physiology—National Institute of Neurological Diseases and Blindness, with Grant Rasmussen

From Indonesia:

Gan Koen Han, Microbiology—University of California at Berkeley, with W. M. Stanley

From Iran:

Hassan Parnianpour, Physics—Brookhaven National Laboratory, with A. Carsten

Samad Vojdani, Bioecology—University of California at Berkeley, with E. Gorton Linsley

From Israel:

Zeew Naveh, Agronomy—University of California at Berkeley, with H. H. Biswell

Israel Navot, Engineering—Polytechnic Institute of Brooklyn, with R. M. Foster

From Japan:

Yoshio Goto, Internal medicine—Cox Medical Research Institute, with F. D. W. Lukens

Hidenori Hasimoto, Fluid dynamics—Johns Hopkins University, with L. S. G. Kovasznay

Yukio Kurita, Chemistry—Duke University, with Walter Gordy

Junzo Nakano, Chemistry—New York State College of Forestry, Syracuse University, with Conrad Schuerch

Gaisi Takeuti, Mathematics—Institute for Advanced Study, with Kurt Gödel

Hisashi Tanaka, Structural mechanics—Brown University, with R. S. Rivlin

Yasushi Watanabe, Biochemistry—California Institute of Technology, with N. H. Horowitz

From Lebanon:

Nicola N. Khuri, Physics—Institute for Advanced Study, with Robert Oppenheimer

From the Netherlands:

Gustaaf Blaak, Plant pathology—Boyce Thompson Institute for Plant Research, with George L. McNew

Pieter Eykhoff, Engineering—University of California at Berkeley, with Samuel Silver

Cornelis van der Leun, Physics—California Institute of Technology, with William A. Fowler

From New Zealand:

John H. Darwn, Mathematics—University of Michigan, with George Hay

David G. Edgar, Physiology—New York State Veterinary College at Cornell University, with S. A. Asdell

Bruce Penfold, Physical chemistry—University of Minnesota, with W. N. Lipscomb

Robert Pilgrim, Physiology—California Institute of Technology, with C. A. G. Wiersma

From Norway:

Kristoffer Apeland, Engineering—University of California at Berkeley, with T. Y. Lin

Jan R. Getz, Engineering—University of California at Berkeley, with R. W. Clough

Arne Reitan, Chemistry—Cornell University, with Hans Bethe

From the Philippines:

Apolinario Carañgal, Biochemistry—Ohio State University, with F. E. Deatherage

Victor Tantengco, Biochemistry—University of Wisconsin, with R. H. Burris

From Union of South Africa:

J. H. N. Loubser, Physics—Columbia Radiation Laboratory, with Charles H. Townes

From Spain:

Antonio Medina, Biochemistry—Indiana University, with Henry R. Mahler

Antonio Reig, Physical chemistry—Duke University, with William R. Krigbaum

From Sweden:

Olof Beckman, Physics—University of California at Berkeley, with Charles Kittel

From Taiwan:

Tung-Ming Lai, Soil chemistry—Michigan State University, with R. L. Cook

Keh Chi Ling, Plant pathology—Louisiana State University, with S. J. P. Chilton

Shan-Ching Sung, Biochemistry—Marquette University, with M. Laskowski

From Thailand:

Sathit Tandanand, Geology—Pennsylvania State University, with H. L. Hartman

From Turkey:

Resan Pakkal, Chemistry—Pennsylvania State University, with W. Conrad Fernelius

Mustafa N. Şişli, Agriculture—University of Minnesota, with C. E. Mickel

Lemi Ulugöl, Engineering—University of Michigan, with J. A. Clark

THIRD CONFERENCE ON PLATELETS

On February 26 and 27, the Subcommittee on Blood Coagulation and the Committee on Blood and Related Problems sponsored the Third Conference on Platelets. The first conference in this series was held on April 30, 1953, and the second on November 18 and 19, 1955. The generous support of the National Heart Institute for the most recent conference made it possible to include contributions from abroad.

An important area of progress reported during these meetings concerned the necessity for metabolic activity for maintaining certain functions of the blood platelet. C. Lockhard Conley of Johns Hopkins University reported on the need for glucose for platelets to cause clot retraction. E. F. Lüscher of Berne, Switzerland, confirmed this finding and added that glucose was also essential for the process of viscous metamorphosis of platelets. G. V. R. Born of Oxford reported the utilization of adenosine triphosphate in the platelets during the process of thromboplastin formation.

Clinical studies of the use of platelets and platelet substitutes were also considered. Several methods of studying the effectiveness of such preparations in animals prior to clinical testing were reviewed. This has been a difficult problem because of differences between platelets from different animal species. Successful use of mice, rats, and dogs for such preliminary testing of materials of human origin was reported. There were no reports of any methods of treatment that gave products as effective as viable platelets in the treatment of hemorrhage resulting from decreased numbers of circulating platelets. Because of the importance of this problem in the atomic age, however, there is active interest in finding such a substitute. Several interesting reports of biochemical activities of materials derived from platelets have provided new leads in this continuing search.

The conference served to summarize the current status of research with platelets and simultaneously focused attention on directions which may prove profitable for continuing research.

JOINT MEETING OF RADIO SCIENTISTS AND RADIO ENGINEERS

The U. S. National Committee of the International Scientific Radio Union (URSI) and the Institute of Radio Engineers (IRE) are holding their joint spring meeting at the Willard Hotel, May 5–7. The three-day meeting will open with a combined technical session on Tuesday morning, May 5. Subsequent scientific sessions will include one or more meeting of each of the following commissions of the U. S. National Committee:

Commission 1—Radio Measurement Methods and Standards
Commission 2—Tropospheric Radio Propagation
Commission 3—Ionospheric Radio Propagation
Commission 4—Radio Noise of Terrestrial Origin
Commission 5—Radio Astronomy
Commission 6—Radio Waves and Circuits

The IRE will be represented by five Professional Groups on *1*) Antennas and Propagation, 2) Circuit Theory, 3) Information Theory, *4*) Instrumentation, and 5) Microwave Theory and Techniques.

The Professional Groups will meet jointly with the appropriate Commissions.

Preceding the joint meeting, the U. S. National Committee of URSI and the members of its seven Commissions will hold business meetings at the National Bureau of Standards in the morning and afternoon of Monday, May 4.

Preliminary programs and additional information may be obtained from the U. S. National Committee, URSI, Academy–Research Council.

CHANGES RECOMMENDED IN NARCOTICS LAWS

The Committee on Drug Addiction and Narcotics has recommended that present narcotics laws be modified to provide greater flexibility with respect to the use of analgesic drugs in medicinal preparations. The Committee pointed out that the development of new synthetic narcotics, differing widely in activity and addiction liability, has produced a situation that could not have been contemplated when current regulations were put into force.

Paradoxically, when a synthetic drug is placed under narcotics control it may be subject to greater restrictions than opium, morphine, codeine, and heroin. The law permits these older drugs to be sold under some circumstances without prescription in exempt preparations such as cough syrups, which contain no more than a specified amount of narcotic to the ounce. No provision has been made, however, for exempting similar preparations of synthetic drugs. In the Committee's opinion this situation discourages manufacturers from attempting to develop new and improved analgesic drugs of intermediate potency, badly needed in medical practice.

Another difficulty arises from our obligation to institute domestic control of any drug placed under international control on recommendation of the World Health Organization. Under United States law a new drug need not be controlled unless it is shown to have addiction-forming or addiction-sustaining liability similar to morphine or cocaine. Under the Geneva Convention a drug having only slight addiction liability is likely to be placed under a modified form of control which permits its sale in compounds similar to our exempt preparations; our Government has then no alternative but to impose full control on the drug and all preparations containing it. This situation is likely to arise more and more frequently as new drugs are developed.

A third problem is the lack of any provision for freeing a drug from control once it has been proclaimed an opiate. The only infallible test is prolonged experience; yet the protection of the public requires an early decision, and requires that any doubts arising from the experimental evidence be resolved in favor of control. At present a decision to institute control is irrevocable, except by special act of Congress, even if experience later shows the drug to be safe.

The Committee believes it desirable to establish two new categories of drugs under the law. One would include drugs of low addiction liability, whose use in exempt preparations would be authorized. The second would comprise drugs not shown to be addicting, but open to suspicion on chemical or pharmacological grounds; these would not be controlled, but their status would be reviewed periodically as new evidence accumulates.

Other changes favored by the Committee are the establishment of a mechanism for reclassifying a drug or freeing it from control when new evidence warrants such action; establishment of a mechanism to provide technical advice to the Government in determining and reviewing the classification of the drugs; and provision for appropriate control of a non-addicting substance which can be converted to an addicting substance with sufficient ease and in sufficient yield as to constitute a risk to public health.

INTERNATIONAL CONGRESS FOR INTERNAL MEDICINE

The Sixth Internationl Congress for Internal Medicine will be held in Basel, Switzerland, August 24–27, 1960. The Congress is being organized in conjunction with the Swiss Society for Internal Medicine. Further details regarding Congress plans and program may be obtained from the Secretariat of the Sixth International Congress for Internal Medicine, 13, Steinentorstrasse, Basel.

COMMITTEE ON URBAN RESEARCH FRAMEWORK STUDY

The Dodge Division of the Chrysler Corporation through the American Trucking Association Foundation and the U. S. Bureau of Public Roads have made grants to the Committee on Urban Research to be used for a framework study designed to guide the research program and other activities of the Committee.

The membership of the committee includes social scientists, engineers, businessmen, planners and government officials organized to step up the search for knowledge needed to cope with transportation and other problems of cities that have become complicated as a consequence of population increases, migration to the urban centers, and technological and economic developments.

The framework study will advance the Committee's objective of promoting a comprehensive nationwide program of urban research, correlating heretofore scattered research efforts, stimulating additional needed research in strategic problem areas, and encouraging financial support for research to be done in universities and other private and public institutions. The study will be headed by Coleman Woodbury of the University of Wisconsin under the supervision of the Committee. Professor Woodbury is an authority on urban planning and the author of numerous technical articles and books on urban planning and problems of cities.

INTERNATIONAL CONFERENCE ON INFORMATION PROCESSING

The International Conference on Information Processing, sponsored by Unesco with the assistance of national technical societies (Joint Computer Committee in the United States), will be held at Unesco Headquarters in Paris, June 15–20, 1959. Plenary sessions on each of the six days will be followed by symposia on specialized topics, but the subject matter area in general is subdivided as follows: *1*) methods of digital computing; 2) logical design of digital computers; 3) common symbolic language for digital computers; *4*) automatic translation of languages; 5) collection, storage, and retrieval of information; and *6*) pattern recognition and machine learning.

Request for additional information and registration forms should be sent to the International Conference on Information Processing, Box 4999, Washington 8, D. C.

The members of the U. S. Organizing Committee for the Conference are:

ISAAC L. AUERBACH, Auerbach Electronics Corporation, *General Chairman*

Program

ALSTON S. HOUSEHOLDER, Oak Ridge National Laboratory, *Chairman*

ARNOLD A. COHEN, Remington Rand Univac, *Vice Chairman*

Arrangements

SAMUEL N. ALEXANDER, National Bureau of Standards, *Chairman*

HOWARD T. ENGSTROM, Remington Rand Univac, *Vice Chairman*

Exhibits

EUGENE M. GRABBE, Ramo-Wooldridge Corporation, *Chairman*

L. DAVID WHITELOCK, U. S. Department of the Navy, *Vice Chairman*

Public Relations

EVAN HERBERT, Automatic Control Magazine, *Chairman*

WILLIAM PEET, II, Electronic Associates, Inc., *Vice Chairman*

NEW EDITORIAL STAFF FOR MATHEMATICAL TABLES

The Division of Mathematics announces that Harry Polachek, Technical Director of the Applied Mathematics Laboratory, David Taylor Model Basin, has been appointed Chairman of the Editorial Committee for the quarterly journal *Mathematical Tables and Other Aids to Computation* effective January 1959. He succeeds C. B. Tompkins, University of California at Los Angeles, who served as chairman since November 1954. The other members of the Editorial Committee are:

C. C. CRAIG, University of Michigan
ALAN FLETCHER, University of Liverpool
EUGENE ISAACSON, New York University
DANIEL SHANKS, David Taylor Model Basin
C. V. L. SMITH, Ballistic Research Laboratories, Aberdeen Proving Grounds, Md.
A. H. TAUB, University of Illinois
C. B. TOMPKINS, University of California
J. W. WRENCH, JR., David Taylor Model Basin

COMMITTEE ON SCIENCE IN UNESCO

The Committee on Science in Unesco, established over 10 years ago under the Office of International Relations, held its 16th meeting at the Academy–Research Council building on Monday, March 2. Ralph E. Cleland of Indiana University, Chairman of the Committee, presided.

Following introductory remarks by the chairman, W. Albert Noyes, Jr., Department of Chemistry, University of Rochester, and Robert H. Hamlin, Assistant to the Secretary of the Department of Health, Education, and Welfare, reported on the major actions taken at the Tenth General Conference of Unesco held in Paris, November 4–December 5, 1958.

At the conclusion of the consideration of a full agenda, the Committee made the following major recommendations:

1) That approximately 20 percent of the total membership of the U. S. National Commission for Unesco should be scientists, since the Natural Sciences portion is approximately one-fifth of the total Unesco budget.
2) That Unesco undertake a major project in the marine sciences in keeping with the recommendations of the International Advisory Committee on Marine Sciences and that the present modest program in marine sciences be expanded and accelerated as soon as possible to establish a basis for a major project in 1962.
3) That Unesco provide the recommended support of the Special Committee on Oceanic Research (SCOR), work with member states to stimulate ocean surveys and their coordination, consider the creation of a World Oceanographic Organization, undertake to provide an international oceanographic ship, and develop an international agreement on the exchange of information regarding the Continental Shelf.
4) That the percentage of funds assigned to the Natural Sciences budget be increased and that this be done on the basis of providing support for specific projects.
5) That the subvention to the International Council of Scientific Unions be increased from $175,000 to $250,000 a year.

NEW LIST OF FOREIGN SCHOLARS

The Committee on the International Exchange of Persons has compiled a new list of foreign scholars available for remunerative positions in American universities and colleges during the academic year 1959–60. This list is prepared annually and includes scholars recommended by the United States Educational Commissions and Foundations abroad. Each scholar on the list is eligible for a Government travel grant covering round-trip transportation to the United States if arrangements are made for a lecturing or research appointment. This 11-page list is available upon request from the Committee on International Exchange of Persons, Academy–Research Council.

AD HOC COMMITTEE ON BIOPHYSICS

At the request of the Executive Board of the Biophysical Society, Detlev W. Bronk, President of the National Academy of Sciences, has appointed an ad hoc committee to consider, under the auspices of the Academy–Research Council, plans for an international organization in biophysics. The present committee is composed of the following members:

ROBLEY C. WILLIAMS, University of California at Berkeley, *Chairman*
ARTHUR K. SOLOMON, Harvard Medical School, *Deputy Chairman*
RICHARD H. BOLT, Massachusetts Institute of Technology
FRANK BRINK, JR., The Rockefeller Institute
KENNETH S. COLE, National Institutes of Health
ALEXANDER HOLLAENDER, Oak Ridge National Laboratory
URNER LIDDELL, National Institutes of Health
RICHARD B. ROBERTS, Carnegie Institution of Washington
WALTER A. ROSENBLITH, Massachusetts Institute of Technology
H. BURR STEINBACH, University of Chicago

The Committee held its first meeting at the Academy–Research Council on January 21. At that time reports on prior contacts with biophysicists in Brazil, Great Britain, the Netherlands, and the U.S.S.R. were presented by Dr. Solomon, Chairman of the International Relations Committee, Biophysical Society; and by Dr. Bolt, member of an ad hoc committee appointed by the International Union of Pure and Applied Physics (IUPAP) to advise on the most appropriate way to advance international relations in biophysics. There is general agreement among the biophysicists that an independent international organization should be established and that in due course application for membership in the International Council of Scientific Unions (ICSU) should be made. This move is encouraged by officers of ICSU.

The committee recommended that the Academy–Research Council lend its support to the establishment of an international organization in pure and applied biophysics by accrediting representatives to the forthcoming conferences at Cambridge and Stockholm and that the Academy inform its sister academies of such action in the hope that other academies might take similar action.

In addition the committee recommended that the Academy–Research Council authorize the receipt of funds to support travel of *1*) a small number of representatives to the preliminary international meeting on biophysics to be held in Cambridge, England, in July 1959, under the sponsorship of the ad hoc committee of IUPAP mentioned above; and *2*) a larger group to attend the international conference on biophysics to be held in Stockholm in 1960 or 1961. At both of these meetings plans will be made for the establishment of an international organization.

UNITED STATES NATIONAL COMMITTEE FOR THE HISTORY AND PHILOSOPHY OF SCIENCE

The U. S. National Committee for the International Union of the History and Philosophy of Science, organized by the Academy–Research Council in late 1957 pursuant to the request of interested national societies and the historians and philosophers of science, held its second meeting in New York on March 27 under the chairmanship of Ernest Nagel, Columbia University. Preceding the meeting, sessions were held by the two permanent subcommittees which correspond to the Divisions of the Union: *1*) Subcommittee on the History of Science, with Chairman Marshall Clagett, Institute of Advanced Studies at Princeton, presiding; and 2) Subcommittee on Logic, Methodology, and Philosophy of Science, with Philip Frank, Columbia University, presiding at the request of Henry Margenau of Yale, the elected chairman.

The principle items of business were concerned with United States preparations for the following meetings: *1*) International Congress on the History of Science and General Assembly of the Division of History of Science at Barcelona and Madrid, Spain, September 1-7, 1959; 2) International Congress on Philosophy of Science and General Assembly of the Division of Philosophy of Science at Stanford University in August 1960; and 3) International Congress and General Assembly on History of Science in 1962.

A subcommittee was appointed to formulate recommendations tending to strengthen the statutes of the Union itself and those of the two Divisions and to bring about more intimate relationships between the constituent organs of the Union.

The Committee received the report of the United States delegation to the General Assembly of the Division of Logic, Methodology, and Philosophy held at Brussels in 1958.

OFFICE OF CRITICAL TABLES

The Office of Critical Tables has received a grant of $198,000 from the National Science Foundation to support the work of the Office for a three-year period. Established in 1955 under the Division of Chemistry and Chemical Technology, the Office coordinates the preparation and compilation of critical data on a continuing basis, surveys the needs for critical numerical data, and develops uniform editorial standards for data presentation. The Office provides a central indexing and directory service of data-compilation projects and receives information from those being supported by the American Petroleum Institute, the Manufacturing Chemists Association, Office of Ordnance Research of the U. S. Army, the Atomic Energy Commission, National Bureau of Standards, the Department of Commerce, the Bureau of Mines, and others.

HIGH ENERGY PHYSICS NEWSLETTER

The Academy–Research Council, on behalf of the U. S. National Committee for the International Union of Pure and Applied Physics, has received a grant of $7,000 from the National Science Foundation to further world-wide scientific cooperation by helping to establish an international newsletter on high energy physics. An equal amount has been contributed to the project by the U.S.S.R. High energy physics studies concern nuclear structure, ele-

mentary particles, and accelerators. The newsletter will begin publication shortly in Geneva, Switzerland, with the assistance of the International Union of Pure and Applied Physics and the European Organization for Nuclear Research (CERN). The newsletter is designed to provide a rapid and economical means for the exchange of information between scientists of all nations and to help prevent expensive duplication of effort and facilities in instrumentation and accelerator development.

STAFF APPOINTMENTS

The Division of Earth Sciences announces the appointment of **Caroline C. Bush** as assistant to the Executive Secretary of the Division. Mrs. Bush is a graduate of the University of Rochester and was formerly with the Army Map Service. She will devote almost full time to the administration of the Foreign Field Research Program.

Edward R. Dyer and **J. P. T. Pearman** have been appointed staff members of the Space Science Board. Dr. Dyer, who will serve as secretary of the Board's committees on astronomy, geodesy, and meteorology, received his Ph.D. degree in astronomy from the University of Virginia in 1948. Before coming to the Academy–Research Council he was on the astronomy faculty of Georgetown University.

Mr. Pearman, who will be secretary of the Board's committees on future vehicular development, space projects, and general engineering service and coordination, comes to the Academy–Research Council from the Operations Evaluation Group set up by Massachusetts Institute of Technology for the Office of Chief of Naval Operations. Mr. Pearman holds an M. A. degree in chemistry from Cambridge University and participated in Britain's wartime development of operational research.

FELLOWSHIP PROGRAMS

NATIONAL SCIENCE FOUNDATION FELLOWSHIPS

For the eighth year the Fellowship Office of the Academy–Research Council has assisted the National Science Foundation (NSF) by receiving and evaluating applications for graduate and postdoctoral fellowships for the academic year 1959–60.

Four thousand four hundred and sixty-one applications for graduate fellowships were reviewed by the eight graduate fellowship evaluation panels selected by the Academy–Research Council. The panels met at the Academy–Research Council building, February 17–19, and the final Graduate Evaluation Board met on February 20. From the list of 1,308 applicants recommended, 1,100 graduate fellowships were awarded by the NSF on March 15.

There were 611 applications for NSF regular postdoctoral fellowships received by the Fellowship Office. Preliminary screening was done by Academy–Research Council divisional committees during the month of January. Their reports were prepared for and presented to the NSF Postdoctoral Fellowship Evaluation Board which met on January 31 and February 1. On the basis of the Board's recommendations, 160 awards were made by the NSF on March 15.

In addition the Fellowship Office also assisted the NSF with two new fellowship programs inaugurated this year—Cooperative Graduate Fellowships and the Summer Fellowships for Graduate Teaching Assistants. During the week of February 23–27, eight screening panels, also assembled by the Academy–Research Council, evaluated 2,872 applications for Cooperative Graduate Fellowships and 1,260 applications for Summer Fellowships for Graduate Teaching Assistants. The final awards will be made by the participating universities and will be announced early in April.

PREDOCTORAL FELLOWSHIPS IN THE NATURAL SCIENCES

Two of the predoctoral fellowships in the natural sciences awarded last year have been renewed for 1959–60, and one new award has been made. These predoctoral fellowships were established by Leeds and Northrup Company to give advanced training to outstanding young scholars in

the fields of physics and chemistry and are administered by the Academy–Research Council. The predoctoral fellowship, established by the Institute of Radio Engineers and administered by the Academy–Research Council, has been extended for three months to enable the Fellow to complete the requirements for his doctoral degree.

The following list gives the name of the recipient, the institution from which he received his degree, as well as the nature and location of his current fellowship research:

Leeds and Northrop Predoctoral Fellows

Wendell Osborne (B.S., Colorado College, 1957)
Polymer chemistry—University of Delaware, with Elizabeth Dyer (second renewal)

George B. Hess (A.B., Princeton University, 1958)
Graduate work in physics—Stanford University, with S. D. Drell (renewal)

Russell M. Pitzer (to receive B.S. in June 1959, California Institute of Technology)
Advanced study of physical chemistry—Harvard University

Institute of Radio Engineers Predoctoral Computer Fellow

Eugene W. Henry (M. S., Notre Dame, 1955)
Advanced training and research in servo-mechanism electronics—Stanford University (extension)

POSTDOCTORAL FELLOWSHIPS IN PETROLEUM RESEARCH

The Fellowship Office has made two new appointments for postdoctoral fellowships in the field of petroleum research for the academic year 1959–60. These postdoctoral fellowships, established by the American Chemical Society and supported by its Petroleum Research Fund, are administered by the Academy–Research Council. William C. Baird, Jr., State University of Iowa, received the award in chemistry and will pursue his fellowship at the Swiss Federal Institute of Technology, Zurich, Switzerland, under V. Perlog. John A. Wood, Jr., now with the Smithsonian Institution Astrophysical Observatory, was awarded the fellowship in geophysics and will study at Cambridge University, England, under B. C. Browne.

RESEARCH ASSOCIATESHIPS IN NATURAL SCIENCES

Eighty-two applications were received and reviewed by the Fellowship Office for postdoctoral research associateships tenable at various government laboratories, certain research centers within the U. S. Air Force, Air Research and Development Command, and at 21 universities under a program sponsored by the U. S. Air Force Office of Scientific Research. At its meeting on March 7, the Academy–Research Council Postdoctoral Board in the Natural Sciences certified 22 candidates to the National Bureau of Standards in Washington, D. C., and Denver, Colo.; 5 to the Naval Research Laboratory; 1 to the Naval Ordnance Laboratory; 3 to the U. S. Army Chemical Corps, Biological Warfare Laboratories; 2 to Air Research and Development Command, Cambridge Research Center; 2 to Wright Air Development Center in Dayton; and 35 university associateships sponsored by the Air Force Office of Scientific Research at 21 cooperating universities.

RECORD OF MEETINGS

January	
2	Committee on Behavioral Sciences, *New York City*
5–9	Highway Research Board, Annual Meeting
6	Armed Forces–National Research Council Committee on Bio-Astronautics
	Federal Construction Council, Task Group on High Temperature Water Systems
	Committee on International Exchange of Persons, Area Review Committees
7	Food Protection Committee
7	Federal Construction Council, Task Group on Test Procedures for Underground Heat Distribution Systems
	Building Research Advisory Board Executive Committee and Building Research Institute Executive Committee, Joint Meeting
7–8	Subcommittee on Carcinogenesis
8	Committee on the Cutaneous System
	Committee on Oceanography
8–9	Special Advisory Committee on Design Criteria for Residential Slab-on-Ground Construction

January	
9	Highway Research Board, Executive Committee
10	National Advisory Committee for AASHO Road Test
10–11	Screening Committee on Postdoctoral Fellowships in Mathematics
	Committee on Drug Addiction and Narcotics
12	Maritime Cargo Transportation Conference
	Committee on International Exchange of Persons, Area Review Subcommittees
	Ad hoc Committee on Tissue Transplantation
13	Advisory Committee for the Science Program of the 7th National Conference of U. S. National Commission for Unesco
	Committee on Dietary Phosphates and Dental Caries
13–14	Institute of Laboratory Animal Resources, Cell Culture Conference
14	Committee on Ship Structural Design, Project Advisory Committee SR-149
14–15	Conference on Noise Control in Buildings, *New York City*
15	Committee on Personnel Armor, *Natick, Mass.*
	Agricultural Board, Executive Committee
	Committee on Oceanography
	Screening Committee on Postdoctoral Fellowships in Earth Sciences
15–16	Advisory Committee on Civil Defense, Ad hoc Subcommittee, *Berkeley, Calif.*
	Screening Committee on Postdoctoral Fellowships in Biology and Agriculture
17–18	Screening Committee on Postdoctoral Fellowships in Anthropology and Psychology
18	Committee on Nutritional Studies at Elgin State Hospital, *Elgin, Ill.*
19	Committee on Sanitary Engineering and Environment
20	Committee on Applications of Mathematics, *Philadelphia*
	Ship Structure Subcommittee, Project Advisory Committee SR-148
	Ad hoc Committee on Military Psychology
	Advisory Board on Education
21	Committee on Hand Functioning and Handwear, *Natick, Mass.*
	Division of Mathematics, Executive Committee, *Philadelphia*
	Ad hoc Committee on Biophysics
21–22	Screening Committee on Postdoctoral Fellowships in Chemistry and Chemical Technology

January	
22–23	Conference on Techniques for Measuring Body Composition, *Natick, Mass.*
	Advisory Committee on Civil Defense
22–24	Screening Committee for Postdoctoral Fellowships in Medical Sciences
23	Ad hoc Conference on Heat Attenuation in Clothing Systems, *New York City*
	U. S. National Committee, International Geographical Union
24	American Geophysical Union, Russian Translation Board
24–26	Screening Committee for Postdoctoral Fellowships in Physics and Astronomy
26	Screening Committee for Postdoctoral Fellowships in Engineering and Industrial Research
26–27	Committee on Undersea Warfare, *New London, Conn.*
27	Prevention of Deterioration Center, Technical Services Committee
29	Committee on Shock and Subcommittee on Plasma, Joint Meeting
	Armed Forces–National Research Council Committee on Bio-Astronautics, Executive Council, *Philadelphia*
30	Committee on Trauma
	Federal Construction Council, Operating Committee
	U. S. National Committee, International Union of Pure and Applied Physics, *New York City*
31–Feb. 1	Committee on Oceanography, *College Station* and *Galveston, Tex.*
	Board for Evaluating Applications for National Science Foundation Postdoctoral Fellowships

February	
1	Subcommittee on Instruments and Techniques, *Sea Island, Ga.*
2	Division of Earth Sciences, Executive Committee
	Conference on Japanese Encephalitis
2–3	Committee on Materials for Large Solid Propellant Rocket Motors
2–4	Conference on Medium Energy Cyclotrons, *Sea Island, Ga.*
3	Federal Construction Council, Task Group on Test Procedures for Underground Heat Distribution Systems
	Division of Medical Sciences, Executive Committee
3–4	Committee on Refractory Metals
6	Committee on Behavioral Sciences, *New York City*
8	Committee on Radiology, Program Panel

February	
8	National Academy of Sciences–National Research Council, Governing Board
9	Committee on Radiology
	Ad hoc Committee on Arid Zones
9–10	Committee on Toxicology
10	Ship Structure Subcommittee, Project Advisory Committee SR-134
	Building Research Institute, Programs Committee
11	Committee on Purity of Chemical Products
12	Committee on Ship Steel, Project Advisory Committee SR-152
	Committee on Fire Research
	Building Research Institute, Subcommittee for Eighth Annual Meeting, *Pittsburgh*
	Advisory Committee for the Science Program of the 7th National Conference of U. S. National Commission for Unesco
	Advisory Board on Quartermaster Research and Development, *Natick, Mass.*
14	Working Group on Environmental Studies of the North Atlantic, *Princeton, N. J.*
16	Building Research Institute, Finance Committee
	Committee on Control of Deterioration, Naval Ordnance Experimental Unit

February	
16	Advisory Board on Education
17	Ad hoc Planning Committee for "Voice of America" Forum Series on Chemistry
18	Committee on Radiation Preservation of Food, *Chicago*
19	Committee on Textile Fabrics, *New York City*
	Committee on Microbiology, *Chicago*
20	Panel on Pavement Performance Loading for AASHO Road Test
	Subcommittee on Waste Disposal
23	Review Committee for Study of Moisture Protection for Slab-on-Ground Construction and for Below-Grade Habitable Spaces
	Committee on Oceanography
25	Building Research Institute, Committee on Research, *New York City*
	Subcommittee on Transfusion Problems
26–27	Third Conference on Platelets
	Committee on Amino Acids
27	Committee on Mathematics Advisory to the Office of Naval Research, *New York City*
	Subcommittee on Blood Coagulation
28	Committee on Blood and Related Problems

NEW PUBLICATIONS

Conference on Fracture, Swampscott, Mass., 1959. *Conference on Fracture, an International Seminar on the Atomic Mechanisms of Fracture, April 12–14, 1959, New Ocean House, Swampscott, Massachusetts, U. S. A., Program and Papers. Sponsored by National Science Foundation, Office of Naval Research, Air Force Office of Scientific Research, [and] Ship Structure Committee.* Washington, NAS–NRC, 1959. [659] p., illus.

Conference on Physical and Chemical Properties of Sea Water, Easton, Md., 1958. *Conference on Physical and Chemical Properties of Sea Water, Easton, Maryland, September 4–5, 1958.* Washington, 1959. (NAS–NRC Publication 600.) 202 p., illus. $2.00.

Conference on the Evaluation of Pharmacotherapy in Mental Illness, Washington, 1956. *Psychopharmacology: Problems in Evaluation. Proceedings of a Conference . . . Sponsored by the National Institute of Mental Health, the National Academy of Sciences–National Research Council, and the American Psychiatric Association, Washington, D. C., September 18–22, 1956. Edited by Jonathan O. Cole [and] Ralph W. Gerard.* Washington, 1959. (NAS–NRC Publication 583.) 662 p. $6.50.

Cormier, Leonard N., *et al. Simplified Satellite Prediction from Modified Orbital Elements.* Washington, NAS–NRC, 1959. (IGY World Data Center A, Rockets and Satellites, IGY Sattellite Report Series no. 7.) 54 p. $1.00.

Digest of Literature on Dielectrics, Volume XXI, 1957. Prepared by the Committee on Digest of Literature of the Conference on Electrical Insulation, Division of Engineering and Industrial Research. Edited by John Hart and Robert A. Soderman. Washington, 1958. (NAS–NRC Publication 599.) 283 p. $5.00.

International Congress of Radiation Research, Burlington, Vt., 1958. *Proceedings of the International Congress of Radiation Research, Burlington, Vermont, U. S. A., August 11–15, 1958. Edited by Douglas E. Smith.* [Co-sponsored by NAS–NRC and the Radiation Research Society, with the support of the European Committee on Radiobiology.] New York, Academic Press, 1959. (*Radiation Research*, Supplement I, 1959.) 582 p. $6.50.

National Academy of Sciences. *Biographical Memoirs, Volume XXXII.* New York, Columbia University Press, 1958. 457 p. $5.00.

National Conference on Clays and Clay Minerals. *Clays and Clay Minerals, Proceedings of the Sixth National Conference on Clays and Clay Minerals, Sponsored by Committee on Clay Minerals of the National Academy of Sciences–National Research Council and University of California, Berkeley, California, August 19–23, 1957. Ada Swineford, Editor.* New York, Pergamon Press, 1959. (Monograph no. 2, Earth Science Series.) 411 p. $8.50.

National Research Council. *Report of First Annual Meeting, National Research Council, 30 March–1 April, 1958.* Washington, NAS–NRC, Office of Information, 1959. 11 p.

National Research Council. Committee on Oceanography. *Oceanography 1960 to 1970; 1—Introduction and Summary of Recommendations. First Chapter of a Report in Progress by the Committee on Oceanography.* Washington, 1959. 33 p.

National Research Council. Division of Engineering and Industrial Research. *Annual Report, 1957–1958.* Washington, 1959. 92 p.

National Research Council. Highway Research Board. *Air Voids in Concrete and Characteristics of Aggregates . . .* Washington, 1958. (NAS–NRC Publication 622. Highway Research Board Bulletin 196.) 45 p., illus. $1.00.

National Research Council. Highway Research Board. *Cement Soil Stabilization . . .* Washington, 1958. (NAS–NRC Publication 624. Highway Research Board Bulletin 198.) 64 p., illus. $1.40.

National Research Council. Highway Research Board. *Improving the Water Repellency of Hardened Concrete . . .* Washington, 1958. (NAS–NRC Publication 623. Highway Research Board Bulletin 197.) 23 p., illus. $0.50.

National Research Council. Highway Research Board. *Relation between Vehicle Characteristics and High Design: a Symposium . . .* Washington, 1958. (NAS–NRC Publication 621. Highway Research Board Bulletin 195.) 48 p., illus. $1.00.

National Research Council. Printing and Publishing Office. *Publications of the National Academy of Sciences–National Research Council, Fall 1958.* Washington, NAS–NRC, 1958. 79 p.

Revere, Althea, and Jaccodine, Ralph. *Electron Microscope Techniques for Study of Fractured Surfaces of Ship Steel Plates.* Washington, NAS–NRC, 1959. (Serial No. SSC-74, Final Report of Project SR-122 to the Ship Structure Committee.) 19 p., illus.

Steward, H. L., *et al. Transplantable and Transmissible Tumors of Animals.* Washington, Armed Forces Institute of Pathology, 1959.

(*Atlas of Tumor Pathology.* Section XII, Fasc. 40.) 378 p., illus. $3.50. (Available from: American Registry of Pathology, Armed Forces Institute of Pathology, Washington 25, D C.)

Webb, Kempton Evans. *Geography of Food Supply in Central Minas Gerais.* Washington, 1959. (NAS–NRC Publication 642. Division of Earth Sciences, Foreign Field Research Program, Report no. 4.) 110 p., illus. $2.00.

Notice of Academy Meetings

NATIONAL ACADEMY OF SCIENCES

Annual Meeting, Washington, D. C., April 27-29, 1959

NATIONAL ACADEMY OF SCIENCES–NATIONAL RESEARCH COUNCIL

Governing Board, Washington, D. C., April 26, 1959

Governing Board, Washington, D. C., June 14, 1959

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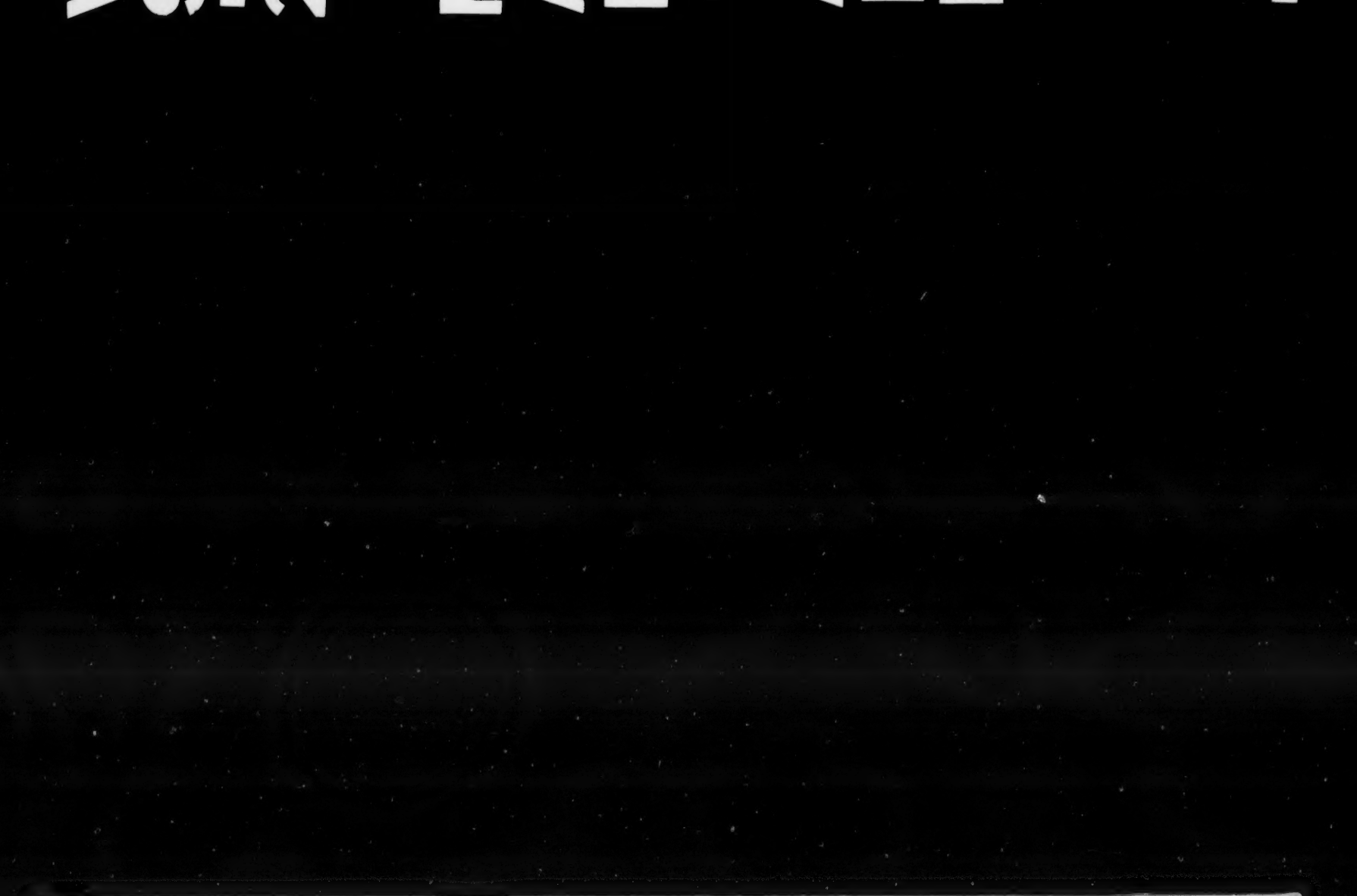
The search for Truth is in one way hard and in another easy. For it is evident that no one can master it fully nor miss it wholly. But each adds a little to our knowledge of Nature, and from all the facts assembled there arises a certain grandeur.

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